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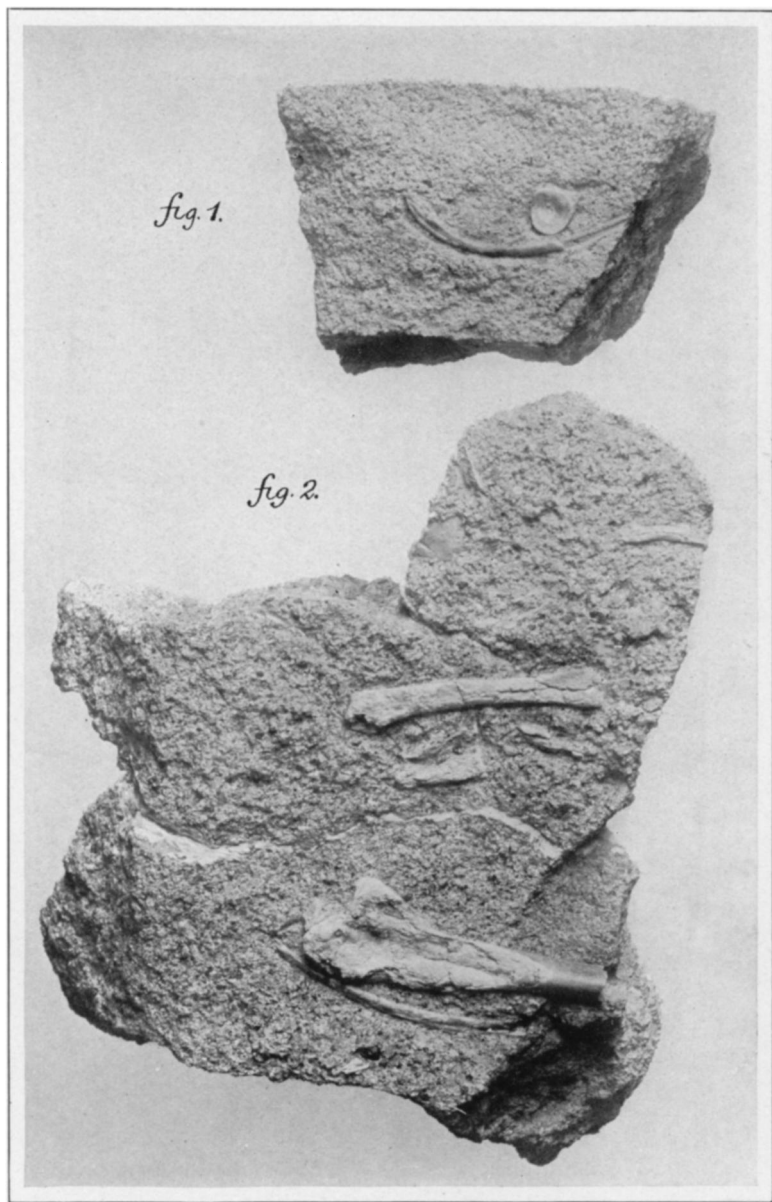
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FOSSIL REMAINS OF EXTINCT CORMORANT, *Phalacrocorax macropus*,
FROM MONTANA.

FOSSIL REMAINS OF THE EXTINCT CORMORANT
PHALACROCORAX MACROPUS FOUND IN MONTANA.

BY R. W. SHUFELDT, M.D.

Plate XXX.

CHARLES H. STERNBERG was the first one to discover the fossil bones of a large extinct cormorant in the Pliocene formation of Oregon. These bones belonged to a number, or rather represented a number of individuals of different ages and probably both sexes. Subsequently, Cope described this extinct cormorant and named it *Graculus macropus*.¹

Several years afterwards, under the name *Phalacrocorax macropus*, I reëxamined the thirty-four parts of fossil bones of the collection made by Sternberg, and compared them with the corresponding ones in several species of existing cormorants found in the avifauna of the United States. A table of measurements was also made and presented.² Including the two metacarpi that originally belonged in the Cóndon collection, there were four more or less imperfect specimens of that bone of the skeleton represented, while none of these fragments were figured on the plates.

Thus our knowledge of this cormorant stood up to the ninth of July, 1913, when the American Museum of Natural History of New York City issued its 'Bulletin' containing my "Review of the Fossil Fauna of the Desert Region of Oregon, with a Description of Additional Material Collected there." (Vol. XXXII, Art. vi, pp. 123-178. Pls. ix-xliii, figs. 1-578.) In this work I refer to what was formerly set forth in the Philadelphia Academy memoir, and the remark is made that "The present reëxamination of the material tends to confirm this latter opinion; and, as the fossil bones of *P. macropus* have never been illustrated, I have devoted four plates and many figures to them in the present paper."

¹ Cope, E. D. Bull. U. S. Geol. and Geogr. Surv. of Terr., Vol. IV, No. 2 (1878). pp. 386, 387.

² Shufeldt, R. W. "A Study of the Fossil Avifauna of the Equus Beds of the Oregon Desert." Jour. Acad. Nat. Sci. Phila., Vol. IX, Pls. xv-xvii, Phila., Oct., 1892, pp. 389-425.

With respect to the present article, the bones which interest us here are to be found on Plate xxi of the aforesaid 'Bulletin' (figs. 262-264), and they represent different fragmental parts of three carpometacarpi of an adult *Phalacrocorax macropus*. Figs. 262 and 263 are of *left-side* bones, the first being rather more than the proximal moiety; fig. 264 is of the distal portion of a carpometacarpus from the right side. The latter does not especially interest us in the present connection, while figs. 262 and 263 distinctly do, as I shall show further on in this paper.

Up to include the early part of the year 1915, no fossil remains of *Phalacrocorax macropus* had been discovered outside the State of Oregon, and if they had, such a discovery was not known to science. Early in February of that year, Mr. Charles W. Gilmore, of the Division of Vertebrate Palæontology of the United States National Museum, referred some fossil bone material to me for examination, reference, and publication. This material consisted of one large and two smaller pieces. (Figs. 1 and 2, Plate XXX.) The largest fragment and the one next in size to it had been repaired by sealing them together with plaster-of-paris, — an excellent piece of work done by one of Mr. Gilmore's assistants at the museum. A few fossil and imperfect bones were firmly fixed in the matrix of the latter piece, the principal one apparently being the rib of some teleostean fish; these bones do not concern us here. On the twelfth of February, 1915, I photographed the two other fragments, natural size, and in such a way as to show the fossil bones the fragments contained. (See Plate XXX.) It will be observed that the smaller fragment presented in it a vertebra and a rib of some adult teleostean fish of the period, which may or may not be known to science, and only interest us here from the fact that they occur in connection with the fossil bird bones found in the largest fragment (Fig. 2). These, with the other specimens, were collected by Mr. C. M. Bauer on the twenty-fifth of October, 1914, while employed by the United States Geological Survey in southeastern Montana. Mr. Bauer was in charge of this collecting party at the time in question, and in noting this specimen he entered the following remarks in his record (p. B 62): "Fish Bones. Locality T. 53 R. 60 E. North Side Cottonwood Creek: Base of Arikaree. Oct. 25, '14." Mr. Gilmore has catalogued this specimen at the

National Museum under number 3251, and informs me that it is from the Lower Miocene formation.

Passing now to an examination of the large fragment shown in Fig. 2 of the Plate, I must first deplore the fact that whoever collected this specimen apparently labored under the impression that all the fossil bones in the matrix were those of some fish, and not sufficiently perfect to be of any use to the palæontologist. He therefore, very evidently, did not bring in all that he could have brought, and probably would have, had he known or appreciated their real value.

All the specimens of fossil bones in this largest fragment are those of some large bird or other. They consist of a rib, the proximal part of a left carpometacarpus; a large phalanx from a bird's foot; also a small, pedal joint, and other pieces too fragmentary to identify. These fossil bones I believe all belonged to the same adult individual, with the possible exception of a rib, which may be a fish's rib, though I am much more inclined to believe it to be a costal rib of the same individual.

The carpometacarpus has its direct anconal aspect exposed, the shaft being hollow and crushed inwards for its upper portion. This bone is the key to the species which the specimens represent. Before making any comparisons, I pronounced that the bird represented was a specimen of *Phalacrocorax macropus*; and as a matter of fact, and as subsequently proven, this upper portion of a carpometacarpus agrees exactly, in the matters of measurement, proportions, characters, and form with the corresponding fragment of a carpometacarpus of *Phalacrocorax macropus* mentioned in a former paragraph of this paper. (Fig. 262, Bull. Amer. Mus. Nat. Hist., July 9, 1913.)

It is the largest bone in the matrix shown in Fig. 2 of the Plate of the present paper. The one next in size is evidently the long, proximal joint of the hallux (of one or the other of the feet) of this cormorant. Its dorsal aspect is exposed, and its distal end is opposite the proximal end of the carpometacarpus in the fragment. It agrees with this bone of the foot in average existing cormorants, apart from being considerably larger. There is no other bone in the skeleton of any cormorant (*Phalacrocorax*) with which it can be confused; and this is the first instance of this particular bone in

the skeleton of a *Phalacrocorax macropus* having come into the possession of science.

Finding this bird in Montana will prove, up to date, that it probably was an abundant species during Pleistocene time and earlier, ranging over a considerable portion of the northwestern section of Middle North America, or at least that portion of this continent now so named.

No little interest also attaches to the fact of finding these remains associated with the fossil bones of a highly specialized teleostean fish, if fish it be, which lived during the same era that this extinct cormorant described by Cope did.



THIRTY-THIRD STATED MEETING OF THE AMERICAN ORNITHOLOGISTS' UNION.

BY JOHN HALL SAGE.

THE Thirty-third Stated Meeting of the American Ornithologists' Union convened in San Francisco, Cal., Monday evening, May 17, 1915. The business meeting was held at the California Academy of Sciences, and the public sessions, commencing Tuesday, May 18, and lasting three days, were held in the Auditoriums of the Young Women's Christian Association and of the Eiler Musical Company, within the Exposition Grounds.

BUSINESS SESSION. The meeting was called to order by the President, Dr. Albert K. Fisher. Eleven Fellows were present. The Secretary's report gave the membership of the Union at the opening of the present Stated Meeting as 1156, constituted as follows: Fellows, 50; Retired Fellows, 3; Honorary Fellows, 13; Corresponding Fellows, 56; Members, 79; Associates, 955.

Since the last meeting (April, 1914) the Union lost fifty-four members, nine by death, eighteen by resignation, and twenty-seven for non-payment of dues. The deceased were: